

**AMENDMENTS TO THE CLAIMS**

Claims 20-53 are pending. Claims 1-19 have been previously cancelled and claim 35 is cancelled in this amendment. Claims 20-29, 31, 37-44, 46 and 48 have been amended to further clarify the claim language. The Applicant requests reconsideration of the claims in view of the following amendments reflected in the listing of claims.

Listing of claims:

1. – 19. (Cancelled)

20. (Currently Amended) A system for processing signals, the system comprising:

~~means for~~ a DSP (Digital Signal Processor) that enables adaptive filtering of adaptation observations for communication and control signals, wherein during said adaptive filtering, said DSP enables:

transforming said adaptation observations from a complex arithmetic to two corresponding sets of real number arithmetic observations by means of binary orthogonalization transformation (BOT);

~~means for~~ computing two corresponding sets of real number arithmetic adaptation parameters by applying two respective real number

Least Square Solvers (LESS) to said two corresponding sets of real number arithmetic observations; ~~and~~

~~means for~~ transforming, after said computing with said two respective LESS, each of said two corresponding sets of real adaptation parameters to a single set of complex number arithmetic adaptation parameters using an inverse binary orthogonalization transform (IBOT); and

~~said means adaptively configuring one or more filters~~ utilizing at least a portion of said single set of complex number arithmetic adaptation parameters for said DSP adaptive filtering of said adaptation observations.

21. (Currently Amended) The system according to claim 20, wherein said two respective real number LESS are applied in parallel.

22. (Currently Amended) The system according to claim 20, wherein said two respective real number LESS are applied in series.

23. (Currently Amended) The system according to claim 20, wherein each of said two respective real number LESS comprises a Recursive Least Squares algorithm (RLS).

24. (Currently Amended) The system according to claim 20, wherein each of said two respective real number LESS comprises a Least Mean Squares (LMS) algorithm.

25. (Currently Amended) The system according to claim 20, wherein each of said two respective real number LESS is a Householder transformation.

26. (Currently Amended) The system according to claim 20, wherein each of said two respective real number LESS is a Cholesky decomposition.

27. (Currently Amended) The system according to claim 20, wherein each of said two respective real number LESS is QR Decomposition (QRD).

28. (Currently Amended) The system according to claim 23, wherein said RLS is computed by a systolic array.

29. (Currently Amended) The system according to claim 20, wherein each of said two respective real number LESS utilizes one or more of a Block Matched Filter Estimator (BMFE), a Block Zero Forcing Estimator (BZFE), and/or a Block Minimum Mean Square Error Estimator (BMMSEE).

30. (Previously Presented) The system according to claim 29, wherein one or more of said BMFE, said BZFE, and/or said BMMSEE are computed via one or both of a Cholesky decomposition and/or a QR Decomposition (QRD).

31. (Currently Amended) The system according to claim 20, comprising means for constraining each of said two respective real number LESS as CLESS by using initial BOT from complex number arithmetic to real number arithmetic; means for applying two real computation, Constrained Least Square Solver, (CLESS), wherein each one produces P output streams; and means for implementing a corresponding number of P IBOT modules from said real number arithmetic to said complex number arithmetic.

32. (Previously Presented) The system according to claim 20 comprising means for performing one or more of temporal, spatial, joint temporal and/or spatial channel estimation of the signal.

33. (Previously Presented) The system according to claim 20 comprising means for performing one or more of temporal, spatial, joint temporal and/or spatial channel equalization.

34. (Previously Presented) The system according to claim 20 comprising means for performing carrier frequency estimation.

35. (Cancelled).

36. (Previously Presented) The system according to claim 20 comprising means for performing one or more of channel estimation, system parameter estimation, channel equalization, recursive updating of output parameters, non-recursive updating of output parameters, and/or system identification.

37. (Currently Amended) A system for processing signals, the system comprising:

one or more processors that enable transforming adaptation observations from ~~said a~~ complex arithmetic to two corresponding sets of real number arithmetic observations using binary orthogonalization transformation (BOT);

said one or more processors enable computing two corresponding sets of real number arithmetic adaptation parameters by applying two respective real number Least Square Solvers (LESS) to said two corresponding sets of real number arithmetic observations; and

said one or more processors enable transforming, after said computing with said two respective LESS, said two corresponding sets of real number arithmetic adaptation parameters to a single set of complex number arithmetic adaptation parameters using an inverse binary orthogonalization transform (IBOT); and

~~said computing and transformings enable adaptively configuring one or more filters~~ utilizing at least a portion of said set of complex number arithmetic adaptation parameters for adaptive filtering of said adaptation observations.

38. (Currently Amended) The system according to claim 37, wherein said two respective real number LESS are applied in parallel.

39. (Currently Amended) The system according to claim 37, wherein said two respective real number LESS are applied in series.

40. (Currently Amended) The system according to claim 37, wherein each of said two respective real number LESS comprises a Recursive Least Squares algorithm (RLS).

41. (Currently Amended) The system according to claim 37, wherein each of said two respective real number LESS comprises a Least Mean Squares (LMS) algorithm.

42. (Currently Amended) The system according to claim 37, wherein each of said two respective real number LESS is a Householder transformation.

43. (Currently Amended) The system according to claim 37, wherein each of said two respective real number LESS is a Cholesky decomposition.

44. (Currently Amended) The system according to claim 37, wherein each of said two respective real number LESS is QR Decomposition (QRD).

45. (Previously Presented) The system according to claim 40, wherein said RLS is computed by a systolic array.

46. (Currently Amended) The system according to claim 37, wherein each of said two respective real number LESS utilizes one or more of a Block Matched Filter Estimator (BMFE), a Block Zero Forcing Estimator (BZFE), and/or a Block Minimum Mean Square Error Estimator (BMMSEE).

47. (Previously Presented) The system according to claim 46, wherein one or more of said BMFE, said BZFE, and/or said BMMSEE are computed via one or both of a Cholesky decomposition and/or a QR Decomposition (QRD).

48. (Currently Amended) The system according to claim 37, wherein said one or more processors constrain each of said two respective real number LESS as CLESS by using initial BOT from complex number arithmetic to real number arithmetic, wherein said at least one processor applies two real computation,

Constrained Least Square Solver, (CLESS), wherein each one produces P output streams, and wherein said at least one processor implements a corresponding number of P IBOT modules from said real number arithmetic to said complex number arithmetic.

49. (Previously Presented) The system according to claim 37, wherein said one or more processors enable performing one or more of temporal, spatial, joint temporal and/or spatial channel estimation of the signal.

50. (Previously Presented) The system according to claim 37, wherein said one or more processors enable performing one or more of temporal, spatial, joint temporal and/or spatial channel equalization.

51. (Previously Presented) The system according to claim 37, wherein said one or more processors enable performing carrier frequency estimation.

52. (Previously Presented) The system according to claim 37, wherein said system is an adaptive filter.

53. (Previously Presented) The system according to claim 37, wherein said one or more processors enable performing one or more of channel estimation, system parameter estimation, channel equalization, recursive updating of output



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parameters, non-recursive updating of output parameters, and/or system identification.